IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SAINT LAWRENCE COMMUNICATIONS LLC, Plaintiff, v. ZTE CORPORATION, ZTE USA, INC., and ZTE (TX) INC., Defendants.	Case No. 2:15-cv-00349-JRG (Lead Case) JURY TRIAL DEMANDED
SAINT LAWRENCE COMMUNICATIONS LLC, Plaintiff, v. MOTOROLA MOBILITY LLC, Defendant.	Case No. 2:15-cv-00351-JRG (Consolidated Case) JURY TRIAL DEMANDED

SUPPLEMENTAL DECLARATION OF TOKUNBO OGUNFUNMI, Ph.D. IN RESPONSE TO DECLARATION OF DR. MARK A. CLEMENTS, Sc.D.

1.   My name is Tokunbo Ogunfunmi. I am offering this declaration in the matter listed above on behalf of Saint Lawrence Communications LLC ("SLC") and at the behest of their attorneys Ahmad, Zavitsanos, Anaipakos, Alavi & Mensing P.C. I am being compensated at my usual rate and my compensation is not dependent on any opinions that I may take in this matter, any testimony, or any intermediate or final resolution in the matter.

Legal Understanding

2.   My legal understanding relevant to the issues addressed herein is reflected in the declaration I submitted on November 25, 2015 in the above captioned case ("Opening Declaration") and is incorporated herein by reference.

Technology Background

3.   My understanding of the relevant technological background is reflected in my Opening Declaration and is incorporated herein by reference.

4.   I have reviewed defendants' Responsive Claim Construction Brief and the declaration of Dr. Mark A. Clements, Sc.D. ("Clements Declaration") submitted therewith. These materials do not change my views and conclusions as set forth in my Opening Declaration.

5.   In the following paragraphs, I will specifically address certain portions of the Clements Declaration.

6.   A number of Dr. Clements' arguments are predicated on the false premise that a signal having content up to 6.4 kHz is not a wideband speech signal. (*See, e.g.,* Clements Declaration, ¶¶ 69, 91). Contrary to Dr. Clements' assertions, a person of ordinary skill in the art would understand that a signal having content up to 6.4 kHz is a wideband speech signal. For the reasons outlined in my Opening Declaration, this understanding is consistent with the specification of the Asserted Patents.

7.   In paragraph 95, Dr. Clements states that "a number of other structures could also be used to implement" the recited functions. [Clements Declaration, ¶ 95]. Dr. Clements then identifies analog circuits such as an "op amp," "CSVD device" or "floating-gate arrays" as examples of analog circuits that a person of ordinary skill in the art could use to implement these functions. [Clements Declaration, ¶ 96]. I disagree. I have been informed that a claim is to be read in light of the specification and in my view, Dr. Clements' statements disregard the specification. Specifically, at least for the reasons set forth in paragraphs 19(a)-(f) of my Opening Declaration and the reasons set forth below, the specification makes it clear that the Asserted Patents are directed to a digital implementation not an analog one.

8.   In paragraph 97, Dr. Clements states that a hybrid circuit that uses analog and digital processing may be used to implement the recited functions. I disagree with that conclusion because the patents specifically expect digital input, i.e. an analog speech signal that has been sampled and digitized (or quantized) to a specific number of bits (usually with 16-bits per digital sample), hence the fixed-point implementations.

9.   In paragraph 162, Dr. Clements states that Figure 4 of the `123 Patent is not restricted to "digital computation" because in 1998 "Advanced Mobile Phone System (AMPS) was still widespread." [Clements Declaration, ¶ 162]. I disagree. AMPS used narrowband FM to transmit signals, not encoders and decoders as shown in Figure 4 of the `123 Patent. Moreover, Dr. Clements' conclusion in the abstract ignores portions of the specification of the Asserted Patents which make it clear that AMPS could not implement the digital speech processing system disclosed in the Asserted Patents:

- All Asserted Patents are directed to encoding/decoding wideband speech. It was well known to those of ordinary skill in the art that AMPS could not be used to process wideband speech and was instead, directed to FM transmission of narrowband speech.
- Digital voice or speech coding has been used in mobile communications since 1989 (GSM FR codec, and later EFR and AMR). In the United States, digital mobile communications started in 1992 using TDMA VESLP codec (and later TDMA

EFR codec) and CDMA QCELP codec. Therefore, at the time of the filing of the Asserted Patents, a person of ordinary skill in the art would understand that the "encoder" and "decoder" in Figure 4 of the `123 Patent refer to digital speech encoders and decoders. This is also evident from the specification which states, for example:

As well known to those of ordinary skill in the art, voice encoding is required in order to reduce the bandwidth necessary to transmit sound signals, for example voice signal such as speech, across the bidirectional wireless radio communication subsystem, i.e., between a radiotelephone 403 and a base station 402.

`123 Pat., 6:52-64.

For instance, it was well known to those of ordinary skill in the art that the statement "[a]s well known to those of ordinary skill in the art, voice encoding is required in order to reduce the bandwidth ...." is inapplicable to analog voice signals and that such voice encoding could not be implemented using AMPS.

- It was well known to those of ordinary skill in the art that the unit "bits per second" is a unit used in the context of digital data processing, not analog circuits. The `123 Patent states that "LP voice encoders (such as 415 and 407) typically operating at 13 kbits/second and below ..." [`123 Pat., 6:58-64]; a terminology that would be inapplicable to an analog implementation such as, for example AMPS.

- The Asserted Patents are directed to adapting the CELP technique to accommodate wideband signals. `123 Pat., 2:23-29. Accordingly, the `123 Patent states that:

A speech encoder converts a speech signal into a digital bitstream which is transmitted over a communication channel (or stored in a storage medium). The speech signal is digitized (sampled and quantized usually with 16-bits per sample) and the speech encoder has the role of representing these digital samples with a smaller number of bits while maintaining a good subjective speech quality.

`123 Pat., 1:24-33. The terminology used in this paragraph would be inapplicable to an analog implementation such as, for example AMPS.
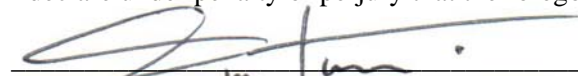
10.   In paragraph 162, Dr. Clements points to Figure 4 of the `123 Patent and states that because "no module is indicated where A/D conversion (or *sampling*) takes place, a digital computer is not disclosed, or even implicated." [Clements Declaration, ¶ 162] (emphasis added). Further, Dr. Clements states that "Figure 4 of the `123 patent does not disclose a general-purpose computer or processor." I disagree. Dr. Clements acknowledges that "Fig. 4 is a simplified, schematic block diagram of a cellular communication system in which the wideband *encoder of FIG. 1* and the wideband decoder of FIG. 2 can be used." [Clements Declaration, ¶ 163] (emphasis added). Accordingly, Figure 1 depicts a block diagram of a wideband encoder that is incorporated in Figure 4. [`123 Pat., 5:22-34]. The input of the encoder of Figure 1 is a "*Sampled* Input Speech Signal" (114). [`123 Pat., Fig. 1]. A person of ordinary skill in the art would understand that the use of a "Sampled Input Speech Signal" suggests that the system is operating in the digital domain. Therefore, contrary to Dr. Clements' assertions, because the input of the encoders (407, 415) is a sampled input speech signal, Figure 4 does include a module where A/D conversion (or sampling) takes place. Accordingly, a person of ordinary skill in the art would appreciate that the encoder of Figure 1 and the communication system of Figure 4 both operate in the digital domain.

11.   In paragraph 166, Dr. Clements states that "computing can be performed on the digital and analog devices discussed in paragraphs 96-98 above." For the reasons discussed above, I disagree with that statement because in the context of the Asserted Patents, the term "compute" refers to a digital implementation.

12.   In paragraphs 166 and 167, Dr. Clements states that the use of fixed-point computing and single-precision arithmetic does not support a computer implemented invention because such terms could also refer to the use of an "abacus," "slide rule" or "simple hand calculations." [Clements Declaration, ¶ 167]. I disagree as Dr. Clements makes a conclusion in the abstract, wholly disregarding the field of technology at issue and the context provided by the specification. Specifically, a person of ordinary skill in the art having the benefit of the disclosure of the Asserted Patents would not consider implementing the recited functions using an "abacus," "slide rule' or "simple hand calculations." Specifically, it would be absurd for a person of ordinary skill in the art to consider an "abacus," "slide rule' or "simple hand calculations" as a viable option for implementing the recited functions which involve complex algorithms, sampling rates of about 16,000 samples per second and interaction with other components of the system. One of ordinary skill in the art would have recognized that in the context of the Asserted Patents, the terms "fixed-point" and "single-precision arithmetic" refer to implementing the algorithms via a digital computer, such as a digital signal processor, a field-programmable gate array, or any other type of digital computer capable of performing the recited algorithms.

13.   Accordingly, I disagree with Dr. Clements conclusion throughout his declaration that the various recited functions can be performed by an analog circuit or a hybrid analog/digital circuit because in light of the specification of the Asserted Patents, a person of ordinary skill in the art would have implemented the recited functions in the digital domain. (*See, e.g.,* Clements Declaration, ¶¶ 104, 107, 108, 109, 111,112,114, etc.).

I declare under penalty of perjury that the foregoing is true and correct.

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TOKUNBO OGUNFUNMI, Ph.D.

Executed on ___December 21, 2015_____